INDICES TO VOLUME 36: 1988

AUTHOR INDEX

A

Ahmadi, Javad, Stephen Grotzinger and Dennis Johnson, *Component Allocation and Partitioning for a Dual Delivery Placement Machine* (OR in Manufacturing), 176–191

Ammons, Jane C., *see* Platzman, Ammons and Bartholdi, 137–144

Applegate, Lynda, M., *see* Nunamaker, Applegate, and Konsynski, (Decision Support Systems), 826–848

B

Ball, Michael O., and Michael J. Magazine, *Sequencing of Insertions in Printed Circuit Board Assembly* (OR in Manufacturing), 192–201

—— **and J. Scott Provan,** *Disjoint Products and Efficient Computation of Reliability*, 703–715

Barahona, Francisco, Martin Grötschel, Michael Jünger and Gerhard Reinelt, *An Application of Combinatorial Optimization to Statistical Physics and Circuit Layout Design*, 493–513

Bard, Jonathan F., *Short-Term Scheduling of Thermal-Electric Generators Using Lagrangian Relaxation*, 756–766

Barron, Hutton, and Charles P. Schmidt, *Sensitivity Analysis of Additive Multiattribute Value Models*, 122–127

Bartholdi, John J., III, *see* Platzman, Ammons and Bartholdi, 137–144

Batta, Rajan, and Samuel S. Chiu, *Optimal Obnoxious Paths on a Network Transportation of Hazardous Materials*, 84–92

Berman, Oded, *see* Simchi-Levi and Berman, 478–484

Bertsekas, Dimitri P., and Paul Tseng, *Relaxation Methods for Minimum Cost Ordinary and Generalized Network Flow Problems*, 93–114

Bessent, A., W. Bessent, T. Clark and J. Elam, *Efficiency Frontier Determination by Constrained Facet Analysis*, 785–796

Bessent, W., *see* Bessent, Bessent, Clark and Elam, 785–796

Bielecki, T., and P. R. Kumar, *Optimality of Zero-Inventory Policies for Unreliable Manufacturing Systems*, 532–541

Bitran, Gabriel R., Wickham Skinner and Willard I. Zangwill, *Operations Research in Manufacturing* (Preface), 172

—— **and Devanath Tirupati,** *Planning and Scheduling for Epitaxial Wafer Production Facilities*, 34–49

—— **and Devanath Tirupati,** *Development and Implementation of a Scheduling System for a Wafer Fabrication Facility* (OR Practice), 377–395

Bordley, Robert F., *The Cost of Delayed Lottery Resolution*, 115–121

Brandwajn, Alexandre, and Yung-Li Lily Jow, *An Approximation Method for Tandem Queues With Blocking*, 73–83

Bulfin, R. L., *see* Liu and Bulfin, 553–559

Bullard, Clark, and Richard Engelbrecht-Wiggans, *Intelligent Data Compression in a Coal Model* (OR Practice), 521–531

C

Cao, Xi-Ren, *A Sample Performance Function of Closed Jackson Queueing Networks*, 128–136

Chatterjee, Kalyan, and Larry Samuelson, *Bargaining Under Two-Sided Incomplete Information: The Unrestricted Offers Case*, 605–617

Chen, Hong, J. Michael Harrison, Avi Mandelbaum, Ann van Ackere and Lawrence M. Wein, *Empirical Evaluation of a Queueing Network Model for Semiconductor Wafer Fabrication* (OR in Manufacturing), 202–215

Chiu, Samuel S., *see* Batta and Chiu, 84–92

Clark, T., *see* Bessent, Bessent, Clark and Elam, 785–796

Cohen, Morris A., and Hau L. Lee, *Strategic Analysis of Integrated Production-Distribution Systems: Model and Methods* (OR in Manufacturing), 216–228

Collins, Roger W., *see* Gass, Collins, Meinhardt, Lemon and Gillette (OR Practice), 5–17

Committe on the Next Decade in Operations Research (CONDOR), *Operations Research: The Next Decade* (OR Forum), 619–637

Conti, John J., *see* Murphy, Conti, Sanders and Shaw, 406–420

Conway, Richard, William Maxwell, John O. McClain and L. Joseph Thomas, *The Role of Work-in-Process Inventory in Serial Production Lines* (OR in Manufacturing), 229–241

D

Daskalaki, Sophia, *see* Smith and Daskalaki (OR or Manufacturing), 343–358

Denardo, Eric V., *see* Tang and Denardo, 767–777; 778–784

Dobson, Gregory, *Sensitivity of the EOQ Model to Parameter Estimates*, 570–574

E

Eaves, B. Curtis, and Uriel G. Rothblum, *A Discrete Time Average Cost Flexible Manufacturing and Operator Scheduling Model Solved by Deconvexification Over Time* (OR in Manufacturing), 242–257

INDICES TO VOLUME 36: 1988

AUTHOR INDEX

A

Ahmadi, Javad, Stephen Grotzinger and Dennis Johnson, *Component Allocation and Partitioning for a Dual Delivery Placement Machine* (OR in Manufacturing), 176–191

Ammons, Jane C., *see* Platzman, Ammons and Bartholdi, 137–144

Applegate, Lynda, M., *see* Nunamaker, Applegate, and Konsynski, (Decision Support Systems), 826–848

B

Ball, Michael O., and Michael J. Magazine, *Sequencing of Insertions in Printed Circuit Board Assembly* (OR in Manufacturing), 192–201

—— **and J. Scott Provan,** *Disjoint Products and Efficient Computation of Reliability*, 703–715

Barahona, Francisco, Martin Grötschel, Michael Jünger and Gerhard Reinelt, *An Application of Combinatorial Optimization to Statistical Physics and Circuit Layout Design*, 493–513

Bard, Jonathan F., *Short-Term Scheduling of Thermal-Electric Generators Using Lagrangian Relaxation*, 756–766

Barron, Hutton, and Charles P. Schmidt, *Sensitivity Analysis of Additive Multiattribute Value Models*, 122–127

Bartholdi, John J., III, *see* Platzman, Ammons and Bartholdi, 137–144

Batta, Rajan, and Samuel S. Chiu, *Optimal Obnoxious Paths on a Network Transportation of Hazardous Materials*, 84–92

Berman, Oded, *see* Simchi-Levi and Berman, 478–484

Bertsekas, Dimitri P., and Paul Tseng, *Relaxation Methods for Minimum Cost Ordinary and Generalized Network Flow Problems*, 93–114

Bessent, A., W. Bessent, T. Clark and J. Elam, *Efficiency Frontier Determination by Constrained Facet Analysis*, 785–796

Bessent, W., *see* Bessent, Bessent, Clark and Elam, 785–796

Bielecki, T., and P. R. Kumar, *Optimality of Zero-Inventory Policies for Unreliable Manufacturing Systems*, 532–541

Bitran, Gabriel R., Wickham Skinner and Willard I. Zangwill, *Operations Research in Manufacturing* (Preface), 172

—— **and Devanath Tirupati,** *Planning and Scheduling for Epitaxial Wafer Production Facilities*, 34–49

—— **and Devanath Tirupati,** *Development and Implementation of a Scheduling System for a Wafer Fabrication Facility* (OR Practice), 377–395

Bordley, Robert F., *The Cost of Delayed Lottery Resolution*, 115–121

Brandwajn, Alexandre, and Yung-Li Lily Jow, *An Approximation Method for Tandem Queues With Blocking*, 73–83

Bulfin, R. L., *see* Liu and Bulfin, 553–559

Bullard, Clark, and Richard Engelbrecht-Wiggans, *Intelligent Data Compression in a Coal Model* (OR Practice), 521–531

C

Cao, Xi-Ren, *A Sample Performance Function of Closed Jackson Queueing Networks*, 128–136

Chatterjee, Kalyan, and Larry Samuelson, *Bargaining Under Two-Sided Incomplete Information: The Unrestricted Offers Case*, 605–617

Chen, Hong, J. Michael Harrison, Avi Mandelbaum, Ann van Ackere and Lawrence M. Wein, *Empirical Evaluation of a Queueing Network Model for Semiconductor Wafer Fabrication* (OR in Manufacturing), 202–215

Chiu, Samuel S., *see* Batta and Chiu, 84–92

Clark, T., *see* Bessent, Bessent, Clark and Elam, 785–796

Cohen, Morris A., and Hau L. Lee, *Strategic Analysis of Integrated Production-Distribution Systems: Model and Methods* (OR in Manufacturing), 216–228

Collins, Roger W., *see* Gass, Collins, Meinhardt, Lemon and Gillette (OR Practice), 5–17

Committe on the Next Decade in Operations Research (CONDOR), *Operations Research: The Next Decade* (OR Forum), 619–637

Conti, John J., *see* Murphy, Conti, Sanders and Shaw, 406–420

Conway, Richard, William Maxwell, John O. McClain and L. Joseph Thomas, *The Role of Work-in-Process Inventory in Serial Production Lines* (OR in Manufacturing), 229–241

D

Daskalaki, Sophia, *see* Smith and Daskalaki (OR or Manufacturing), 343–358

Denardo, Eric V., *see* Tang and Denardo, 767–777; 778–784

Dobson, Gregory, *Sensitivity of the EOQ Model to Parameter Estimates*, 570–574

E

Eaves, B. Curtis, and Uriel G. Rothblum, *A Discrete Time Average Cost Flexible Manufacturing and Operator Scheduling Model Solved by Deconvexification Over Time* (OR in Manufacturing), 242–257

Elam, J., *see* **Bessent, Bessent, Clark and Elam,** 785–796
Engel, D. D., and J. R. Weisinger, *Estimating Visual Detection Performance at Sea,* (OR Practice), 651–659
Engelbrecht-Wiggans, Richard, *see* **Bullard and Engelbrecht-Wiggans** (OR Practice), 521–531

F

Federgruen, A., and H. Groenevelt, *Characterization and Optimization of Achievable Performance in General Queueing Systems,* 733–741
Fine, Charles H., *A Quality Control Model With Learning Effects,* 437–444
Frostig, Esther, *A Stochastic Scheduling Problem With Intree Precedence Constraints,* 937–943

G

Gass, Saul I., Roger W. Collins, Craig W. Meinhardt, Douglas M. Lemon, and Marcia D. Gillette, *The Army Manpower Long-Range Planning System,* (OR Practice), 5–17
Gascon, Andre, and Robert C. Leachman, *A Dynamic Programming Solution to the Dynamic, Multi-Item, Single-Machine Scheduling Problem,* 50–56
Gershwin, Stanley B., *see* **Maimon and Gershwin** (OR in Manufacturing), 279–292
Gillette, Marcia D., *see* **Gass, Collins, Meinhardt, Lemon and Gillette** (OR Practice), 5–17
Gray, Paul R., and Jan Karel Lenstra, *Introduction for Special Focus on Decision Support Systems* (Decision Support Systems), 823–825
Groenevelt, H., *see* **Federgruen and Groenevelt,** 733–741
Grötschel, Martin, *see* **Barahona, Grötschel, Jünger and Reinelt,** 493–513
Grotzinger, Stephen, *see* **Ahmadi, Grotzinger and Johnson** (OR in Manufacturing), 176–191

H

Harris, Carl M., and William G. Marchal, *State Dependence in M/G/1 Server-Vacation Models,* 560–565
Harrison, J. Michael, *see* **Chen, Harrison, Mandelbaum, van Ackere and Wein** (OR in Manufacturing), 202–215
Heragu, Sunderesh S., and Andrew Kusiak, *Machine Layout Problem in Flexible Manufacturing Systems* (OR in Manufacturing), 258–268
Hipp, Sabine K., and Ulrich D. Holzbaur, *Decision Processes with Monotone Hysteretic Policies,* 585–588
Holzbaur, Ulrich, D., *see* **Hipp and Holzbaur,** 585–588

J

Jaillet, Patrick, *A Priori Solution of a Traveling Salesman Problem in Which a Random Subset of the Customers Are Visited,* 929–936
Jain, Anjain, and John W. Mamer, *Approximations for the Random Minimal Spanning Tree With Application to Network Provisioning,* 575–584
Jones, Christopher V., *The Three-Dimensional Gantt Chart* (Decision Support Systems), 891–903
Johnson, Dennis, *see* **Ahmadi, Grotzinger and Johnson** (OR in Manufacturing), 176–191
Jonker, Roy, and Ton Volgenant, *An Improved Transformation of the Symmetric Multiple Traveling Salesman Problem* (Technical Note), 163–167
Jow, Yung-Li Lily, *see* **Brandwajn and Jow,** 73–83
Jünger, Michael, *see* **Barahona, Grötschel, Jünger and Reinelt,** 493–513

K

Keeney, Ralph L., *Structuring Objectives for Problems of Public Interest,* 396–405
Kleinrock, Leonard, and Hanoch Levy, *The Analysis of Random Polling Systems,* 716–732
Klingman, Darwin, John Mote and Nancy V. Phillips, *A Logistics Planning System at W. R. Grace* (OR Practice), 811–822
Konsynski, Benn R., *see* **Nunamaker, Applegate and Konsynski** (Decision Support Systems), 826–848
Kumar, P. R., *see* **Bilecki and Kumar,** 532–541
Kusiak, Andrew, *see* **Heragu and Kusiak** (OR in Manufacturing), 258–268

L

Lamond, Bernard F., *see* **van Dijk and Lamond,** 470–477
Leachman, Robert C., *see* **Gascon and Leachman,** 50–56
Lee, Hau, L., *see* **Cohen and Lee** (OR in Manufacturing), 216–228
—— **and William P. Pierskalla,** *Mass Screening Models for Contagious Diseases With No Latent Period,* 917–928
—— **and Candace Arai Yano,** *Production Control in Multistage Systems with Variable Yield Losses* (OR in Manufacturing), 269–278
Lelano, Joanna M., *see* **Sherali and Leleno,** 682–702
Lemon, Douglas M., *see* **Gass, Collins, Meinhardt, Lemon and Gillette** (OR Practice), 5–17
Lenstra, Jan Karel, *see* **Gray and Lenstra** (Introduction to DSS), 823–825
Levy, Hanoch, *see* **Kleinrock and Levy,** 716–732
Liang, Ting-peng, *Development of a Knowledge-Based Model Management System* (Decision Support Systems), 849–863
Liu, C. Y., and R. L. Bulfin, *Scheduling Open Shops With Unit Execution Times to Minimize Functions of Due Dates,* 553–559

M

Magazine, Michael J., *see* **Ball and Magazine** (OR in Manufacturing), 192–201
Maimon, Oded Z., and Stanley B. Gershwin, *Dynamic Scheduling and Routing for Flexible Manufacturing Systems That Have Unreliable Machines* (OR in Manufacturing), 279–292
Malone, Thomas W., and Stephen A. Smith, *Modeling the Performance of Organizational Structures,* 421–436
Mamer, John W., *see* **Jain and Mamer,** 575–584
Mandelbaum, Avi, *see* **Chen, Harrison, Mandelbaum, van Ackere and Wein** (OR in Manufacturing), 202–215

Marchal, William G., *see* **Harris and Marchal,** 560–565
Matsuo, Hirofumi, *The Weighted Total Tardiness Problem With Fixed Shipping Times and Overtime Utilization* (OR in Manufacturing), 293–307
Maxwell, William, *see* **Conway, Maxwell, McClain and Thomas** (OR in Manufacturing), 229–241
McClain, John O., *see* **Conway, Maxwell, McClain and Thomas** (OR in Manufacturing), 229–241
Meinhardt, Craig W., *see* **Gass, Collins, Meinhardt, Lemon and Gillette** (OR Practice), 5–17
Mitchell, J. Christopher, *Multi-Item Inventory Systems With a Service Objective*, 747–755
Moore, Laurence, J., *see* **Tyagi, Moore and Taylor** (Decision Support Systems), 864–881
Mote, John, *see* **Klingman, Mote and Phillips** (OR Practice) 811–822
Murphy, Frederic H., John J. Conti, Reginald Sanders and Susan Shaw, *Modeling and Forecasting Energy Markets With the Intermediate Future Forecasting System*, 406–420

N

Nozari, Ardavan, and Ward Whitt, *Estimating Average Production Intervals Using Inventory Measurements: Little's Law for Partially Observable Processes* (OR in Manufacturing), 308–323.
Nunamaker, J. F., Lynda M. Applegate and Benn R. Konsynski, *Computer-Aided Deliberation: Model Management and Group Decision Support* (Decision Support Systems), 826–848

O

Özekici, Süleyman, *Optimal Periodic Replacement of Multicomponent Reliability Systems*, 542–552.

P

Pentico, David W., *The Discrete Two-Dimensional Assortment Problem* (OR in Manufacturing), 324–332
Phillips, Nancy V., *see* **Klingman, Mote and Phillips** (OR Practice), 811–822
Pierskalla, William P., *see* **Lee and Pierskalla,** 917–928
Plante, Robert D., *The Nozzle Guide Vane Problem* (OR Practice), 18–33
Platzman, Loren K., Jane C. Ammons and John J. Bartholdi III, *A Simple and Efficient Algorithm to Compute Tail Probabilities From Transforms*, 137–144
Posner, Marc E., *The Deadline Constrained Weighted Completion Time Problem: Analysis of a Heuristic*, 742–746
Prékopa, András, *Boole-Bonferroni Inequalities and Linear Programming*, 145–162
Provan, J. Scott, *see* **Ball and Provan,** 703–715

R

Radó, Francisc, *The Euclidean Multifacility Location Problem*, 485–492
Rego, Vernon, *see* **Szpankowski and Rego,** 958–966
Reiman, Martin I., and Burton Simon, *An Interpolation Approximation for Queueing Systems with Poisson Input*, 454–469
Reinelt, Gerhard, *see* **Barahona, Grötschel, Jünger and Reinelt,** 493–513
Ronen, Boaz, and Dan Trietsch, *A Decision Support System for Purchasing Management of Large Projects* (Decision Support Systems), 882–890
Rothblum, Uriel G., *see* **Eaves and Rothblum** (OR in Manufacturing), 242–257

S

Samuelson, Larry, *see* **Chatterjee and Samuelson,** 605–618
Sanders, Reginald, *see* **Murphy, Conti, Sanders and Shaw,** 406–420
Schmidt, Charles P., *see* **Barron and Schmidt,** 122–127
Shachter, Ross D., *Probabilistic Inference and Influence Diagrams*, 589–604
Shanthikumar, J. George, *On Stochastic Decomposition in M/G/1 Type Queues with Generalized Server Vacations*, 566–569
—— **and David D. Yao,** *On Server Allocation in Multiple Center Manufacturing Systems* (OR in Manufacturing), 333–342
Shaw, Susan, *see* **Murphy, Conti, Sanders and Shaw,** 406–420
Sherali, Hanif D., and Joanna M. Leleno, *A Mathematical Programming Approach to a Nash-Cournot Equilibrium Analysis for a Two-State Network of Oligopolies*, 682–702
Silver, Mark S., *Descriptive Analysis for Computer-Based Decision Support* (Decision Support Systems), 904–916
Simchi-Levi, David, and Oded Berman, *A Heuristic Algorithm for the Traveling Salesman Location Problem on Networks*, 478–484
Simon, Burton, *see* **Reiman and Simon,** 454–469
Skinner, Wickham, *see* **Bitran, Skinner and Zangwill** (Preface), 172
Smith, J. MacGregor, and Sophia Daskalaki, *Buffer Space Allocation in Automated Assembly Lines* (OR in Manufacturing), 343–358
Smith, Stephan A., *see* **Malone and Smith,** 421–436
Somlyódy, László, and Roger J.-B. Wets, *Stochastic Optimization Models for Lake Eutrophication Management*, 660–681
Svoronos, Antony, and Paul Zipkin, *Estimating the Performance of Multi-Level Inventory Systems*, 57–72
Szpankowski, Wojciech, *Stability Conditions for Multidimensional Queueing Systems with Computer Applications*, 944–957
—— **and Vernon Rego,** *Some Theorems on Instability With Applications to Multiaccess Protocols*, 958–966

T

Tang, Christopher S., *A Max-Min Allocation Problem: Its Solutions and Applications* (OR in Manufacturing), 359–367

—— **and Eric V. Denardo,** *Models Arising from a Flexible Manufacturing Machine, Part I: Minimization of the Number of Tool Switches*, 767–777
—— **and Eric V. Denardo,** *Models Arising from a Flexible Manufacturing Machine, Part II: Minimization of the Number of Switching Instants*, 778–784
Taylor, Bernard W., III, *see* **Tyagi, Moore and Taylor** (Decision Support Systems), 864–881
Thomas L. Joseph, *see* **Conway, Maxwell, McClain and Thomas** (OR in Manufacturing), 229–241
Tirupati, Devanath, *see* **Bitran and Tirupati,** 34–49
——, *see* **Bitran and Tirupati** (OR Practice), 377–395
Trietsch, Dan, *see* **Ronen and Trietsch** (Decision Support Systems), 882–890
Tseng, Paul, *see* **Bertsekas and Tseng,** 93–114
Tyagi, Rejesh, Laurence J. Moore and Bernard W. Taylor III, *A Decision Support System for Funds Management in a Public University* (Decision Support Systems), 864–881

V

Van Ackere, Ann, *see* **Chen, Harrison, Mandelbaum, van Ackere and Wein** (OR in Manufacturing), 202–215.
Van Dijk, Nico M., and Bernard F. Lamond, *Simple Bounds for Finite Single-Server Exponential Tandem Queues*, 470–477
Volgenant, Ton, *see* **Jonker and Volgenant** (Technical Note) 163–167

W

Wagner, Harvey M., *Operations Research: A Global Language for Business Strategy* (OR Forum), 797–803
Wein, Lawrence M., *see* **Chen, Harrison, Mandelbaum, van Ackere and Wein** (OR in Manufacturing), 202–215
Weisinger, J. R., *see* **Engel and Weisinger** (OR Practice), 651–659
Wets, Roger J.-B., *see* **Somlyódy and Wets,** 660–681
Whitt, Ward *see* **Nozari and Whitt** (OR in Manufacturing), 308–323
Wittrock, Robert J., *An Adaptable Scheduling Algorithm for Flexible Flow Lines*, 445–453

Y

Yano, Candace Arai, *see* **Lee and Yano** (OR in Manufacturing), 269–278
Yao, David D., *see* **Shanthikumar and Yao** (OR in Manufacturing), 333–342

Z

Zangwill, Willard I., *see* **Bitran, Skinner and Zangwill** (Preface), 172
Zipkin, Paul, *see* **Svoronos and Zipkin,** 57–72

SUBJECT INDEX

The subject index conforms to the categories established in The OR/MS Index, 1952–1976, 1976–1981. The 1952–1976 cumulative index was compiled by Kneale T. Marshall and F. Russell Richards, and the 1976–1981 cumulative index was compiled by Jon W. Tolle and Richard E. Stone. The indices were published in 1978 and 1983 by The Institute of Management Sciences and the Operations Research Society of America.

A

Analysis of algorithms, suboptimal algorithms
Ball, M. O., automatic control of manufacturing, 192–201.
Heragu, S. S., comparison of heuristic algorithms, 258–268.

C

Communications
Szpankowski, W., stability of random access protocols, 944–957; instability of multiaccess protocols, 958–966
Computers
Malone, T. W., organizational principles in computer system design, 421–436; analogies between human organizations and computer systems, 421–436.
Szpankowski, W., stability of multiprocessor systems, 944–957
Computers, artificial intelligence
Liang, T. P., knowledge-based systems, 849–863

D

Decision analysis
Barron, H., sensitivity of additive models, 122–126
Nunamaker, J. F., analysis of issues and assumptions, 826–848
Shachter, R. D., representation, evaluation and information requirements, 589–604.
Decision analysis, applications
Keeney, R. L., shipping spent nuclear fuel, 396–405
Decision analysis, multiple criteria
Bordley, R. F., reference effects, 115–121
Dynamic programming
Shachter, R. D., inference procedure and information needs, 589–604

Dynamic programming/optimal control
Maimon, O. Z., dynamic programming, 279–292.
Dynamic programming, applications
Gascon, A., lot scheduling by dynamic programming, 50–57
Pentico, D. W., dynamic programming applications, 324–332
Dynamic programming, Markov
Hipp, S. K., Markov decision processes with switching costs, 585–588
Özekici, S., multicomponent reliability systems, 542–552

E

Economics
Bessent, A., input-output analysis, 785–796
Sherali, H. D., Nash-Cournot solutions; network of oligopolies, 682–702.
Engineering
Heragu, S. S., flexible manufacturing systems, 258–268.
Environment
Bullard, C., electric power industry models, 521–531.

F

Facilities/equipment planning
Jain, A., network planning, 575–584
Simchi-Levi, D., location of a traveling salesman, 478–494
Facilities/equipment planning, design
Shanthikumar, J. G., facilities design, 333–342
Facilities/equipment planning, layout
Heragu, S. S., machine layout problem, 258–268
Facilities/equipment planning, location
Radó, F., Euclidean multifacility location, 484–492
Facilities/equipment planning, maintenance/replacement
Fine, C. H., maintenance with stochastic learning, 437–444
Finance, management
Tyagi, R., funds management in a public university, 864–881
Forecasting, applications
Murphy, F. H., forecasting, 406–420

G

Games/group decisions
Bullard, C., cores of linear production games, 521–531.
Nunamaker, J. F., group support systems; deliberation, negotiation and decision making, 826–848
Sherali, H. D., noncooperative games, 682–702
Government
Murphy, F. H., government policy analysis, 406–420

H

Health care
Lee, Hau L., epidemiology and health care, 917–928

I

Information systems
Bessent, A., model management, 785–796
Gray, P. R., decision support systems, 823–825
Liang, T. P., model management for decision support, 849–863
Silver, M. S., decision support systems, 904–916
Information systems, management
Ronen, B., systems for purchasing support, 882–890
Tyagi, R., computer-based DSS for funds management, 864–881
Inventory/production
Bilecki, T., optimality of zero inventory policies, 532–541
Cohen, M. A., inventory and production, 216–228
Conway, R., inventory/production simulation, 229–241
Dobson, G., EOQ model and parameter sensitivity, 570–574
Lee, H. L., production reject allowances, 269–278
Maimon, O. Z., inventory and production, 279–292
Mitchell, J. C., multi-item inventory systems with a service objective, 747–755
Shanthikumar, J. G., stochastic models of production systems. 333–342
Inventory/production, applications
Bitran, G. R., semiconductor industry, 34–49; 377–395
Ronen, B., purchasing applications and production scheduling, 882–890
Inventory/production, approximations
Gascon, A., economic lots for time varying demands, 50–57.
Svoronos, A., multi-echelon systems, 57–72
Inventory/production, deterministic models
Ahmadi, J., populating printed circuit boards, 176–191
Pentico, D. W., inventory/production deterministic models, 324–332
Inventory/production, operating characteristics
Conway, R., inventory/production operation characteristics, 229–241
Inventory/production, perishable/aging items
Cohen, M. A., inventory/production operating characteristics, 216–228
Lee, H. L., optimal policies for yield losses, 269–278
Pentico, D. W., inventory/production operating characteristics, 324–332
Inventory/production, policies, ordering
Ronen, B., ordering by using a decision support system, 882–890
Inventory/production, planning horizons
Nozari, A., estimating average production intervals, 308–323
Inventory/production, uncertainty, stochastic
Shanthikumar, J. G., stochastic models of production systems, 332–342

M

Man–machine systems
Jones, C., deterministic job shop scheduling, 891–903
Silver, M. S., descriptive analysis for DSS, 904–916
Mathematics, combinatorics
Ball, M. O., combinatorics, 703–715

Barahona, F., the max-cut polytope, 493–513
Platzman, L. K., #*P*-complexity of Laplace transform inversion, 137–144
Mathematics, systems solutions
Bard, J. F., electric utilities, 756–766
Military
Engel, D. D., search and surveillance, 651–659
Military, logistics
Klingman, D., logistics application, 811–822
Military, tracking
Gass, S. I., manpower planning, 5–17

N

Natural resources, energy
Murphy, F. H., energy market forecasting, 406–420
Natural resources, water
Somlyódy, L., lake eutrophication and water quality management, 660–681
Networks/graphs, applications
Batta, R., hazardous material, 84–92
Klingman, D., constrained network flow, 811–822
Matsuo, H., transshipment problem for approximation, 293–307
Plante, R. D., overhaul of gas turbine engines, 18–33
Networks/graphs
Liang, T. P., graph-based reasoning, 849–863
Shachter, R. D., structure to represent and solve decision/inference problems, 589–604
Simchi-Levi, D., location on networks, 478–484
Van Dijk, N. M., stochastic tandem queues, 470–477
Networks/graphs, flow algorithms
Ball, M. O., postman algorithms, 192–201
Bertsekas, D. P., optimization of single commodity network flows, 93–114
Networks/graphs, stochastic
Ball, M. O., stochastic problems, 703–715
Jain, A., random minimal spanning trees, 575–584
Networks/graphs, traveling salesman
Jaillet, P., probabilistic version, 929–936
Jonker, R., multiple traveling salesman problem, 163–167
Simchi-Levi, D., heuristics for the location of a traveling salesman, 478–484
Networks/graphs, theory
Plante, R. D., combinatorial optimization, 18–33
Networks/graphs, tree algorithms
Jain, A., approximation to MSTs, 575–584

O

Organizational studies, design
Malone, T. W., formal theory of organizational design, 421–436

P

Planning
Nunamaker, J. F., methodology and software, 826–848
Policies
Dobson, G., sensitivity of uncertainty in parameters, 570–574
Probability
Reiman, M. I., light and heavy traffic limit theorems, 454–469
Probability, distribution comparisons
Platzman, L. K., compute tail probability from transform, 137–144.
Prékopa, A., approximation of probabilities by linear programming, 145–162
Probability, Markov processes
Szpankowski, W., ergodicity and nonergodicity of multidimensional Markov chains, 944–957; generalized drift, nonergodicity and instabilities of multidimensional Markov chains, 958–966
Probability, renewal processes
Cohen, M. A., stochastic model applications, 216–228
Lee, H. L., stochastic model applications, 917–928
Probability, stochastic model applications
Somlyódy, L., probabilistic constraints and recourse model, 660–681
Production/scheduling
Ball, M. O., automatic control of manufacturing, 192–201
Bilecki, T., optimal production rate for unreliable manufacturing systems, 532–541
Bitran, G. R., semiconductor industry, 34–49; 377–395
Conway, R., production scheduling, 229–241
Eaves, B. C., flexible manufacturing operator scheduling, 242–257
Frostig, E., stochastic, 937–943
Gascon, A., multi-item production scheduling, 50–56
Liu, C. Y., open shop, 553–559
Maimon, O. Z., production and scheduling, 279–292
Posner, M. E., single machine scheduling, 742–746
Tang, C. S., production planning, 359–367; material handling, 767–777; 778–785.
Wittrock, R. J., production scheduling heuristic, 445–453
Production/scheduling, deterministic
Jones, C., interactive, three-dimensional computer graphics, 891–903
Production/scheduling, flexible manufacturing/line balancing
Matsuo, H., single machine total tardiness problem, 293–307
Professional
Wagner, H. M., addresses and OR/MS implementation, 797–803
Programming
Bessent, A., fractional, 785–796
Posner, M. E., bounds for a greedy heuristic, 742–746
Programming, complementarity
Sherali, H. D., equilibrating fixed points, 682–702
Programming, integer, algorithms
Ahmadi, J., machine setup parameters, 176–191

Barahona, F., a cutting plane method for the max-cut problem, 493–513
Matsuo, H., error bound analysis, 293–307
Tang, C. S., branch-and-bound algorithm, 767–777; heuristics, 778–784; integer programming, 359–367
Programming, integer, algorithms, branch-and-bound
Jonker, R., minimal tree-based algorithm, 163–167
Programming, integer, algorithms, group
Barahona, F., applications of integer programming to physics and VLSI design, 493–513
Programming, integer, applications
Tang, C. S., manufacturing applications, 359–367
Programming, integer, nonlinear
Bullard, C., transportation problem approximations to linear programs, 521–531
Programming, integer theory
Plante, R. D., heuristic solution procedure, 18–33
Programming, linear
Mitchell, J. C., dual algorithms for locally convex programs, 747–755
Programming, linear algorithms
Bertsekas, D. P., algorithms for linear network optimization, 93–114
Programming, linear, large scale systems
Klingman, D., large scale linear programming, 811–822
Tyagi, R., multicriteria funds allocation model, 864–881
Programming, multiple criteria
Gass, S. I., goal programming, 5–17
Programming, nonlinear, theory
Prékopa, A., approximation of probabilities by linear programming, 145–162
Programming, stochastic
Somlyódy, L., recourse model, 660–681

Q

Queues
Federgruen, A., optimization, 733–741
Harris, C. M., server vacation queues, 560–565
Kleinrock, L., random polling, 716–732
Nozari, A., conservation laws, 308–323
Shanthikumar, J. G., stochastic decomposition, 566–569
Queues, applications
Chen, H., queueing applications, 202–215
Queues, approximations
Brandwagn, A., approximate solution, 73–83
Queues, balking and reneging
Reiman, M. I., interpolation approximation for queueing systems, 454–469
Queues, cyclic
Harris, C. M., single server decomposition, 560–565
Queues, limit theorems
Cao, X. R., convergence of derivatives, 128–136
Queues, multichannel
Federgruen, A., preemptive priority rules, 733–741
Hipp, S. K., monotone hysteretic optimal policies, 585–588
Queues, nonstationary
Harris, C. M., state-dependent, 560–565
Queues, networks
Cao, X. R., general queueing networks, 128–136
Chen, H., queueing networks, 202–215
Smith, J. M., queueing networks with finite waiting room, 343–358
Queues, optimization
Cao, X. R., perturbation analysis, 128–136
Shanthikumar, J. G., optimization of queueing systems, 333–342
Smith, J. M., optimization in queueing networks, 343–358
Queues, tandem
Brandwajn, A., open tandem queues, 73–83
Van Dijk, N. M., finite single server, 470–477

R

Reliability
Ball, M. O., reliability, 703–715
Bard, J. F., mixer integer, dynamic programming, 756–766
Bilecki, T., optimal production rate for unreliable manufacturing systems, 532–541
Frostig, E., life distributions, 937–943
Reliability, maintenance/repairs
Bard, J. F., large-scale systems, 756–766
Reliability, quality control
Fine, C. H., quality control model with learning effects, 437–444
Reliability, replacement/renewal
Özekici, S., optimal periodic replacement, 542–552
Research and development
CONDOR, future of operations research, 619–637

S

Statistics, estimation
Nozari, A., indirect estimation via Little's law, 308–323

T

Transportation, route selection
Batta, R., hazardous material, 84–92
Jonker, R., vehicle routing, 163–167

U

Utility/preference, applications
Keeney, R. L., structuring multiple objectives, 393–405
Utility/preference, multiattribute
Bordley, R. F., disappointment as an attribute, 115–121
Utility/preference, theory
Bordley, R. F., utility theory, 115–121

CONTENTS, VOLUME 36: 1988

Number 1 January–February 1988

IN THIS ISSUE 2

OR PRACTICE

The Army Manpower Long-Range Planning System 5
Saul I. Gass, Roger W. Collins, Craig W. Meinhardt, Douglas M. Lemon and Marcia D. Gillette

The Nozzle Guide Vane Problem 18
Robert D. Plante

ARTICLES

Planning and Scheduling for Epitaxial Wafer Production Facilities 34
Gabriel R. Bitran and Devanath Tirupati

A Dynamic Programming Solution to the Dynamic, Multi-Item, Single-Machine Scheduling Problem 50
André Gascon and Robert C. Leachman

Estimating the Performance of Multi-Level Inventory Systems 57
Antony Svoronos and Paul Zipkin

An Approximation Method for Tandem Queues with Blocking 73
Alexandre Brandwagn and Yung-Li Lily Jow

Optimal Obnoxious Paths on a Network: Transportation of Hazardous Materials 84
Rajan Batta and Samuel S. Chiu

Relaxation Methods for Minimum Cost Ordinary and Generalized Network Flow Problems 93
Dimitri P. Bertsekas and Paul Tseng

The Cost of Delayed Lottery Resolution 115
Robert F. Bordley

Sensitivity Analysis of Additive Multiattribute Value Models 122
Hutton Barron and Charles P. Schmidt

A Sample Performance Function of Closed Jackson Queueing Networks 128
Xi-Ren Cao

A Simple and Efficient Algorithm to Compute Tail Probabilities from Transforms 137
Loren K. Platzman, Jane C. Ammons and John J. Bartholdi III

Boole-Banferroni Inequalities and Linear Programming 145
András Prékopa

TECHNICAL NOTE

An Improved Transformation of the Symmetric Multiple Traveling Salesman Problem 163
Roy Jonker and Ton Volgenant

CONTRIBUTORS 168

Number 2 March–April 1988

PREFACE 172

IN THIS ISSUE 173

ARTICLES

Component Allocation and Partitioning for a Dual Delivery Placement Machine 176
Javad Ahmadi, Stephen Grotzinger and Dennis Johnson

Sequencing of Insertions in Printed Circuit Board Assembly 192
Michael O. Ball and Michael J. Magazine

Empirical Evaluation of a Queueing Network Model for Semiconductor Wafer Fabrication 202
Hong Chen, J. Michael Harrison, Avi Mandelbaum, Ann van Ackere and Lawrence M. Wein

Strategic Analysis of Integrated Production-Distribution Systems: Models and Methods 216
Morris A. Cohen and Hau L. Lee

The Role of Work-in-Process Inventory in Serial Production Lines 229
Richard Conway, William Maxwell, John O. McClain and L. Joseph Thomas

A Discrete Time Average Cost Flexible Manufacturing and Operator Scheduling Model Solved by Deconvexification Over Time 242
B. Curtis Eaves and Uriel G. Rothblum

Machine Layout Problem in Flexible Manufacturing Systems 258
Sunderesh S. Heragu and Andrew Kusiak

Production Control in Multistage Systems with Variable Yield Losses 269
Hau L. Lee and Candace Arai Yano

Dynamic Scheduling and Routing for Flexible Manufacturing Systems That Have Unreliable Machines 279
Oded Z. Maimon and Stanley B. Gershwin

The Weighted Total Tardiness Problem with Fixed Shipping Times and Overtime Utilization 293
Hirofumi Matsuo

Estimating Average Production Intervals Using Inventory Measurements: Little's Law for Partially Observable Processes 308
Ardavan Nozari and Ward Whitt

The Discrete Two-Dimensional Assortment Problem 324
David W. Pentico

On Server Allocation in Multiple Center Manufacturing Systems 333
J. George Shanthikumar and David D. Yao

Buffer Space Allocation in Automated Assembly Lines 343
J. MacGregor Smith and Sophia Daskalaki

A Max-Min Allocation Problem: Its Solutions and Applications 359
Christopher S. Tang

CONTRIBUTORS 368

APPRECIATION 371

Number 3 May–June 1988

IN THIS ISSUE 374

OR PRACTICE

Development and Implementation of a Scheduling System for a Wafer Fabrication Facility 377
Gabriel R. Bitran and Devanath Tirupati

ARTICLES

Structuring Objectives for Problems of Public Interest 396
Ralph L. Keeny

Modeling and Forecasting Energy Markets with the Intermediate Future Forecasting System 406
Frederic H. Murphy, John J. Conti, Reginald Sanders, and Susan H. Shaw

Modeling the Performance of Organizational Structures 421
Thomas W. Malone and Stephen A. Smith

A Quality Control Model with Learning Effects 437
Charles H. Fine

An Adaptable Scheduling Algorithm for Flexible Flow Lines 445
Robert J. Wittrock

An Interpolation Approximation for Queueing Systems With Poisson Input 454
Martin I. Reiman and Burton Simon

Simple Bonds for Finite Single-Server Exponential Tandem Queues 470
Nico M. van Dijk and Bernard F. Lamond

A Heuristic Algorithm for the Traveling Salesman Location Problem on Networks 478
David Simchi-Levi and Oded Berman

The Euclidean Multifacility Location Problem 485
Francisc Radó

An Application of Combinatorial Optimization to Statistical Physics and Circuit Layout Design 493
Francisco Barahona, Martin Grötschel, Michael Jünger, and Gerhard Reinelt

CONTRIBUTORS 514

Number 4 July–August 1988

IN THIS ISSUE 518

OR PRACTICE

Intelligent Data Compression in a Coal Model 521
Clark W. Bullard and Richard Engelbrecht-Wiggans

ARTICLES

Optimality of Zero-Inventory Policies for Unreliable Manufacturing Systems 532
T. Bielecki and P. R. Kumar

Optimal Periodic Replacement of Multicomponent Reliability Systems 542
Süleyman Özekici

Scheduling Open Shops with Unit Execution Times to Minimize Functions of Due Dates 553
C. Y. Liu and R. L. Bulfin

State Dependence in $M/G/1$ Server-Vacation Models 560
Carl M. Harris and William G. Marchal

On Stochastic Decomposition in $M/G/1$ Type Queues with Generalized Server Vacations 566
J. George Shanthikumar

Sensitivity of the EOQ Model to Parameter Estimates 570
Gregory Dobson

Approximations for the Random Minimal Spanning Tree with Application to Network Provisioning 575
Anjain Jain and John W. Mamer

Decision Processes with Monotone Hysteretic Policies 585
Sabine K. Hipp and Ulrich D. Holzbaur

Probabilistic Inference and Influence Diagrams 589
Ross D. Shachter

Bargaining Under Two-Sided Incomplete Information: The Unrestricted Offers Case 605
Kalyan Chatterjee and Larry Samuelson

OR FORUM

Operations Research: The Next Decade 619
Committee on the Next Decade in Operations Research

CONTRIBUTORS 638

APPRECIATION TO 1987 REFEREES 640

Number 5 September–October 1988

IN THIS ISSUE 648

OR PRACTICE

Estimating Visual Detection Performance at Sea 651
D. D. Engel and J. R. Weisinger

ARTICLES

Stochastic Optimization Models for Lake Eutrophication Management 660
László Somlyódy and Roger J.-B. Wets

A Mathematical Programming Approach to a Nash-Cournot Equilibrium Analysis for a Two-Stage Network of Oligopolies 682
Hanif D. Sherali and Joanna M. Leleno

Disjoint Products and Efficient Computation of Reliability 703
Michael O. Ball and J. Scott Provan

The Analysis of Random Polling Systems 716
Leonard Kleinrock and Hanoch Levy

Characterization and Optimization of Achievable Performance in General Queueing Systems 733
A. Federgruen and H. Groenevelt

The Deadline Constrained Weighted Completion Time Problem: Analysis of a Heuristic 742
Marc E. Posner

Multi-Item Inventory Systems with a Service Objective 747
J. Christopher Mitchell

Short-Term Scheduling of Thermal-Electric Generators Using Lagrangian Relaxation 756
Jonathan F. Bard

Models Arising from a Flexible Manufacturing Machine, Part I: Minimization of the Number of Tool Switches 767
Christopher S. Tang and Eric V. Denardo

Models Arising from a Flexible Manufacturing Machine, Part II: Minimization of the Number of Switching Instants 778
Christopher S. Tang and Eric V. Denardo

Efficiency Frontier Determination by Constrained Facet Analysis 785
A. Bessent, W. Bessent, T. Clark and J. Elam

OR FORUM

Operations Research: A Global Language for Business Strategy 797
Harvey M. Wagner

CONTRIBUTORS 804

Number 6 November–December 1988

IN THIS ISSUE 808

OR PRACTICE

A Logistics Planning System at W. R. Grace 811
Darwin Klingman, John Mote and Nancy V. Phillips

INTRODUCTION

Special Focus on Decision Support Systems (DSS) 823
Paul Gray and Jan Karel Lenstra

SPECIAL FOCUS ARTICLES

Computer-Aided Deliberation: Model Management and Group Decision Support 826
J. F. Nunamaker, Lynda M. Applegate and Benn R. Konsynski

Development of a Knowledge-Based Model Management System 849
Ting-peng Liang

A Decision Support System for Funds Management in a Public University 864
Rajesh Tyagi, Laurence J. Moore and Bernard W. Taylor III

A Decision Support System for Purchasing Management of Large Projects 882
Boaz Ronen and Dan Trietsch

The Three-Dimensional Gantt Chart 891
Christopher V. Jones

Descriptive Analysis for Computer-Based Decision Support 904
Mark S. Silver

ARTICLES

Mass Screening Models for Contagious Diseases with No Latent Period 917
Hau L. Lee and William P. Pierskalla

A Priori Solution of a Traveling Salesman Problem in Which a Random Subset of the Customers are Visited 929
Patrick Jaillet

A Stochastic Scheduling Problem with Intree Precedence Constraints 937
Esther Frostig

Stability Conditions for Multidimensional Queueing Systems with Computer Applications 944
Wojciech Szpankowski

Some Theorems on Instability with Applications to Multiaccess Protocols 958
Wojciech Szpankowski and Vernon Rego

CONTRIBUTORS 967

INDICES TO VOLUME 36: 1988 970
Author Index
Subject Index

CONTENTS, VOLUME 36: 1988 977